POLICY DIALOGUE ON

RENEWABLE GENERATION AND REGIONAL POWER TRADE IN AFRICA

READING FOR SESSION #2

REGIONAL INSTITUTIONS OF AFRICAN POWER POOLS

AFRICAN SCHOOL OF REGULATION

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REGIONAL INSTITUTIONS OF AFRICAN POWER POOLS[1]

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1. Introduction

The power pools in Africa have been established to foster cooperation within the interconnected power sector at regional scale. These power pools have been established by the regional economic communities (RECs) of the African Union. The RECs are institutions of African states whose purpose is facilitating regional economic integration among countries of the same region and through the wider African Economic Community. These RECs have different institutional characteristics, which reflect on the associated power pools in terms of their structure, governance and level of executive power.

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Generally speaking, the different institutional arrangements of a regional market are meant to ensure an equitable distribution of participants' obligations and benefits, shared use of the transmission grid and power plants, coordinated operation, and some level of joint effort in infrastructure capacity expansion. This often entails trade-offs between the efficient utilisation of resources and national self-sufficiency. As a tool for regional cooperation, African power pools have a development element that affects their institutions. African power pools are institutionalized as development organisations for promoting regional integration. This makes establishing African power pools more than an exercise for designing a regional market but also for building regional capacity and infrastructure.

The institutional context of African power pools includes the design of regional institutions and laws, the centralization and harmonisation of these institutions, and the influence of stakeholders. These institutions[2] may constrain some market design options that require a high degree of coordination and responsibility allocation; hence, they directly affect the efficiency of power trade.

This technical note briefly analyses the regional institutions of three African power pools: The Southern African Power Pool (SAPP), the Western African Power Pool (WAPP), and the Eastern African Power Pool (EAPP). For the three power pools, we examine the institutional foundations, governance structure, authority, and supporting institutions. Finally, we conclude with the question of how regional integration and institutional differences have shaped the development of the several power pools.

2. The institutional foundations

The founding RECs of the three power pools have significantly different institutional characteristics. For SAPP, the Southern African Development Community (SADC) is an inter-governmental institution and a secretariat for regional cooperation in specific sectors. It operates through regional protocols and agreements between member countries. For WAPP, the Economic Community of West African States (ECOWAS) is a supranational entity with a commission authorised to issue legal demands through directives and regulations. For EAPP, the Common Market for Eastern and Southern Africa (COMESA) has a technical foundation, and its treaty is based on the Preferential Trade Area that explicitly promotes regional integration by removing trade barriers. The regional dynamic within these RECs is also different. Generally, in both ECOWAS and SADC, Nigeria and South Africa enjoy hegemonic power, respectively. These countries have some degree of leverage to drive or block elements of their region's integration agenda due to their economic or military superiority. However, in COMESA, no single member state can wield this kind of influence across the multiple cooperation areas.

Because of these institutional differences between the founding regional bodies, the degree of involvement between the RECs and their power pools is different. ECOWAS strongly influences WAPP and manages it through its special regional institutions, e.g., the regional regulator ERERA. ECOWAS also adopts the master plans of WAPP and helps market creation by adopting policies

[2] Institutions are defined as the humanly devised constraints that structure political, economic, and social interactions. They consist of both informal constraints (sanctions, taboos, customs, traditions, and codes of conduct) and formal rules (constitutions, laws, and property rights). In this technical note, institutions are used to indicate either formal rules or to refer to organisations in general, e.g., financial institutions.

and regulations on the national level. In contrast, COMESA is primarily a trading platform for collaborations between Eastern and Southern countries and does not include all EAPP members. Therefore, EAPP is loosely tied to COMESA. SAPP has a middle position in that it is an institute of SADC, but the latter does not interfere with its operation and gives it considerable autonomy in deciding its internal affairs. In all three cases, the regional body has no power or mechanism for enforcing decisions on member countries. Although ECOWAS has the legal power to make binding decisions, it lacks the supranational power to enforce them, something that is critical to implement, for instance, regional regulations concerning interconnections between countries and regional expansion plans.

3. The governance structure

The governance structure of each power pool has a different kind of decision-making authority. The highest decision-making level of SAPP, the executive board, is a simple single-class board with national utilities as its board members. SAPP allows IPPs to obtain membership but excludes them from the executive board and the management committee. Additionally, IPPs have limited voting rights on specific topics. Hence, national utilities have a dominant position in deciding SAPP's internal rules of the market and operation. SAPP can make changes in the operational rules by itself, but any change related to its policy or involving other external entities must go through the ministers of SADC. EAPP has a more politically driven governance structure. Its highest decision-making authority is the council of ministers, which consists of the countries' energy ministers. EAPP rejects IPPs in its membership and only allows national utilities.

On the other hand, the governance model of WAPP does not involve political stakeholders and formally mandates its executive officers to be independent of market participants. WAPP welcomes IPPs and consumer representatives as official members. The general assembly is the highest decision-making authority and includes all members with equal voting rights. Hence, the governance model of WAPP is more democratic and inclusive than SAPP and EAPP, thus incentivising agents to join the power pool. However, more than half of the votes belong to only two countries, Ghana and Nigeria (each with ten votes out of a total of 39[3]), making it possible for these two countries to block decisions if they coordinate to do so.

The organisational committees of the power pools are similar in terms of functionalities but vary in their designation and focal activities. WAPP and EAPP have a dedicated secretariat for coordinating the pool activities, while SAPP has a coordination centre. WAPP also has a strong focus on facilitating regional projects and mobilising financial resources. Owing to its functioning market, SAPP has a dedicated market committee and market surveillance.

4. The regional institutions

4.1. The regional regulators

In the three regions, regional regulatory institutions have been established with various roles and authorities. The ECOWAS region displays the highest centralisation of regulatory institutions. The ECOWAS Commission plays an active role in the creation of the market through regional directives and regulations. ECOWAS has designated ERERA (ECOWAS Regional Electricity Regulatory

[3] WAPP annual report, 2021, https://www.ecowapp.org/sites/default/files/wapp_2021_annual_report.pdf

Authority) to regulate regional trade and WAPP's activities. ERERA's responsibilities include, inter alia, establishing a transparent tariff-setting methodology for regional power pooling, adopting technical regulation, monitoring regional market operations (including approving any contract for cross-border exchange), resolving disputes among regional market participants, contributing to the development of regional energy policy, and assisting in building capacity of national regulatory bodies. The institutions of ERERA give it both statutory and quasi-judiciary power for issuing regulations and decisions that are binding and directly applicable in the ECOWAS territory[4]. So far, ERERA has approved the WAPP Regional Market Rules, the Operation Manual, the Regional Electricity Market Procedures, and has developed models for bilateral agreements, regulations for transmission tariff methodology[5] and open access.

In the SADC region, the Regional Electricity Regulators Association of Southern Africa (RERA) has been established as a platform for effective cooperation among national energy regulators. It has the role of facilitating the harmonisation of regulatory policies, legislation, standards, and practices. However, RERA does not have any delegated authority to establish or enforce the regional regulations and rules. RERA has been assigned the responsibility of working to support national regulators and making recommendations to SADC. Therefore, RERA mainly cooperates with SAPP in mutual areas of interest, for instance, the harmonisation of the grid code in the region. Due to the lack of a regional authority, SAPP is considered a self-regulated market in which national utilities agree among themselves on the market rules and transmission regulations. This situation inhibits the harmonisation in different areas, such as effective transmission planning and capacity mechanisms or the coordination of operating reserves.

The region of EAPP exhibits a disparity of regulatory institutions. EAPP is different from the other two power pools in that it is not a formal institution of COMESA. EAPP member countries lack regional institutional unity by belonging to three economic communities IGAD, EAC, and COMESA. EAPP includes in its governance structure a regulatory body called the independent regulatory board (IRB) that is intended to be the regional regulator (reporting to the ministers). However, the IRB is currently unstaffed, its role and authority are unclear, and it lacks the institutions constituting its establishment. On the other hand, several regulatory institutions exist in the region, and each belongs to its respective REC, for example, EREA of EAC and RAERESA of COMESA. In the absence of a REC encompassing all countries, the member countries of EAPP would have to sign an agreement giving the IRB the power of regulating power trade[6].

4.2. The regional infrastructure planning

The regional market can have different institutional arrangements for regional infrastructure planning and implementation. A centralised institution can be assigned the responsibility of devising a regional expansion plan (or at least harmonising national master plans). Or the

[4] ECOWAS, 2007. Regulation C/REG.27/12/07 on the composition, organisation, functions and operation of the ECOWAS Regional Electricity Regulatory Authority (ERERA).

[5] The tariff methodology is the MW-km that is transaction-based, which contradicts the main principles for transmission cost allocation and best practices. See the technical note on transmission cost allocation.

[6] Such an agreement would require the modification of the national law of the countries to be applicable throughout the region. This institutional model has been adopted in the regional market of Central America.

countries could present their transmission expansion plans to be made consistent later with a regional perspective.[7]

Each of the three power pools plays a different role in regional infrastructure planning. In EAPP, the power pool is responsible for harmonising national master plans into a regional plan. This has been carried out only twice, in 2011 and 2014. These two regional master plans do not give technical details of the priority projects and mainly serve as recommendations to coordinate national plans. They also do not delve into the financing aspects or propose an action plan for the implementation. Additionally, the criteria for selecting priority projects and defining them are not clear. Because of this, it is totally up to national systems to take the regional master plan into account and to carry out the investment decisions.

SAPP contributes slightly more to regional planning than EAPP. The power pool updated the regional master plan several times (in 2001, 2005, 2007, and 2017) and adopted seven criteria for selecting the list of priority projects[8]. After that, SADC adopts SAPP's regional master plan but only as a guide for member countries to consider. The implementation of priority projects is left to countries and private investors. The cost of these projects can be recovered through SAPP regional charges based on the MW-km method (currently under revision) and privately negotiated contracts between generators and large consumers. SAPP has a project advisory unit (PAU) to provide financial bankability services to new IPPs and oversee their execution. It also coordinates the transmission line projects that include more than one party by prioritising the off-takers and allocating the risk among them. Hence, it acts as an interface to provide finance from different liquidity pools, for instance, government support, financial institutions, private sector equity, export credit agency, development finance institution, and other capital markets. SAPP is currently establishing the Regional Transmission Infrastructure Financing Facility (RTIFF) as an approach to developing and financing priority regional transmission projects (both interconnectors and national transmission lines) through regional planning and prioritisation, agreeing on common operating rules, and pooling financial resources.

By lacking the authority to develop a regional transmission expansion plan and proposing new lines, in both SAPP and EAPP, it becomes also difficult to establish a sound cost allocation method for interconnection projects, consequently reducing their feasibility and resulting in inadequate cost allocations. Therefore, building interconnections becomes dependent on the financing capabilities of the two countries being connected, an issue that SAPP is attempting to address through PAU and RTIFF.

In contrast to SAPP and EAPP, WAPP plays a more active role in infrastructure planning and implementation. The ECOWAS commission mandates WAPP to not only develop a regional master plan but also to implement regional projects adopted by the commission[9]. The institutions of WAPP guarantee independence from political involvement, giving the process a level of transparency that potentially should promote investments from international institutions (e.g.

[7] For more details, see L. Olmos and I. Perez-Arriaga, "Regulation of the power sector, chapter 10: Regional markets." Springer, London, 01 2013, vol. 61, ch. 10, pp. 501–536.

[8] But lacks the criteria of prioritising and approving them, as well as defining what can be considered a regional project.

[9] This mandate comes from WAPP Articles of Association that requires WAPP to ensure "the full and effective implementation of WAPP Priority Projects".

the World Bank) that seek to reduce transaction costs by avoiding corruption (presumably in member countries). This is also owing to the fact that ECOWAS Energy Protocol protects foreign investments in infrastructure.

In 2018, WAPP developed an extensive master plan consisting of five volumes covering all aspects, from project selection to investments and implementation strategy, and was followed by a business plan in 2020. WAPP's master plan is validated by ECOWAS and endorsed by all member states. Therefore, it eases the projects' implementation and approval by national authorities. WAPP is in charge of all regional projects[10] in the WAPP master plan either directly or indirectly by closely following up with national utilities. Depending on the project structure, projects that are classified as a "special purpose vehicle" will have a specially created company to implement the project and operate the infrastructure after commissioning. Some projects are implemented by countries through concessional loans (sometimes coupled with grants) from partners of the WAPP project implementation unit. Other projects can follow a power purchase agreement (PPA) framework, e.g., the solar parks in Burkina Faso and Mali, through auctions.

An advantage of having WAPP centralising planning and project implementation is that it allows for more investments from non-member states due to a larger market (having national projects under the WAPP master plan eases financing them by donors). Additionally, it enables optimal planning and use of resources in the region and can help identifying the beneficiaries of interconnections. WAPP's regulation of transmission cost allocation at regional level has been questioned and some experts consider that it must be modified to adapt it to the best international practices, which would result in facilitating cross-border trade.

4.3. The regional market operators

SAPP distinguishes between the market operator and the system operator. The system operators are selected as the national system operators with largest generation capacity. These operators are responsible for balancing activities in the different parts of the regional network. The regional grid is divided into three control areas, each with its own control area system operator. Eskom serves as the operator for Botswana, Lesotho, southern Mozambique, Namibia, South Africa, and Swaziland; Zimbabwe Electricity Supply Authority (ZESA) is the operator for Zimbabwe and northern Mozambique; and Zambia Electricity Supply Corporation (ZESCO) is the operator for Zambia and the DRC.

SAPP is the only power pool with a functioning market operator, with the coordination centre located in Harare, Zimbabwe, which is responsible for collecting all trading information from bilateral contracts, running the competitive markets, and scheduling power exchanges between control areas.

WAPP has adopted a different approach, and it is establishing the Information and Coordination Centre (ICC) as the System and Market Operator (SMO), responsible for balancing activities, operational planning of the interconnectors, allocation of transmission capacity, metering, and coordination of the pooling schedule with domestic TSOs and control area operators. The operator of a control area ensures that the inter-area flows are maintained, while the domestic

[10] WAPP arguably has an obscure definition of a regional project that does not clearly distinguish it from a national project. The definition could be extended to internal lines that restrict regional trade.

TSOs in each area ensure that the flows agreed at the regional level are maintained in the interconnectors under their responsibility. The three parties maintain communication together for this purpose. The SMO reports to ERERA and WAPP executive board. The SMO is authorised to make modifications to the market rules and the operation manual.

EAPP is yet to develop a structure for its market and system operator.

5. Alternative approaches to regional integration

A power pool can be designed bottom-up or top-down. In principle, the bottom-up approach does not necessitate the development of regional regulations. Instead, it relies on signing internal agreements between utilities and establishing market rules for trading among electrically connected systems. SAPP is a case of a bottom-up established power pool. On the contrary, the top-down approach means that national systems adapt to the requirements of the power pool by implementing regional regulations and policies consistent with the regional regulation. The condition is to have a regional authority – created by supranational bodies or agreements – with sufficient executive power to establish the power pool rules. WAPP is a case of a top-down established power pool. The two approaches coincide with the two prevalent theoretical views on regional integration: intergovernmentalism and neofunctionalism. The bottom-up approach is in line with intergovernmentalism, which views regional integration as a process of members negotiating their interests and building bargains on them. The top-down approach is aligned with neofunctionalism, which views regional integration as an outcome of supranational institutions that do away with state-centrism for transnational interdependence.

Similarly, the regional infrastructure can be developed through a centralised or a decentralised approach. In a 'low politics' integration, the power dynamic of member states shapes the integration process. As states do not give up aspects of their sovereignty to regional institutions, national utilities also maintain their independence; hence, the development of the power sector infrastructure is decentralised. In this situation, the power pool would play a minor role that typically reflects the preference of powerful member states. This level of integration may be structured via a regional executive secretariat (e.g., SADC). Initially, SAPP had no role in infrastructure development beyond identifying priority projects. Later, when member states needed expertise in facilitating projects, SAPP PAU was established. This functionality expansion is a demand-generating process known as 'spillover' in regional integration theories. In the case of EAPP, as it does not belong institutionally to any of the RECs (fragmented 'low politics' integration), its infrastructure development is de facto decentralised. It is not surprising that infrastructure has developed to connect member states of the sub-regional communities (EAC: Kenya, Uganda, and Tanzania, and Great Lakes countries: Burundi, DRC, and Rwanda).

In contrast, the 'high politics' integration takes the form of transnational institutions with a degree of supranational power (e.g., ECOWAS commission) that requires a transfer of power from member states to regional institutions. The power pool has more authority in this situation, and its role reflects regional needs. This explains why WAPP has a strong focus to respond to the investments needs in the region.

Aspects of the power pool organisation, like membership and regulation, can be understood through the changes happening with power sector reforms and institutions in member countries. For instance, when looking at the regulation of SAPP, member countries did not have a national

regulator until 1997. This may be a factor in SAPP not having a regional regulator, either. When considering the pool membership, whether it is open for IPPs or not, this reflects the degree of private sector involvement in national power systems. In 1995, there was no private sector involvement in SAPP as privatisation and IPPs were not implemented. Therefore, SAPP membership only included national utilities at that time. As the reforms progressed in member countries, IPPs were admitted in 2007. However, as national utilities remain reluctant to recede their position, IPPs have been given limited voting rights.

The situation was different in WAPP. By 2006, countries like Ghana, Côte d'Ivoire, Mali, and Senegal had already privatised their utilities, and the number of IPPs was significant in Nigeria. Therefore, WAPP Membership was open to all enterprises. In EAPP, some countries attempted privatisation but without unbundling national utilities and allowing the entry of private investors (except in Uganda). IPPs were also introduced but were obligated to sell to state utilities. Therefore, in the case of EAPP, the reforms were limited and only in a few countries and did not beget strong private-sector involvement to push for membership in the power pool[11].

Finally, international institutions have played a catalyst role in the development of the three power pools. The same international institutions financially support the three power pools: the World Bank, the African Development Bank, the USAID, the SIDA, the NORAD, and the EU. These institutions also facilitate technical support through other organisations (IRENA, for instance). SAPP and WAPP also receive financial support from their regional development banks of ECOWAS and South Africa. SAPP receives technical support from the Swedish and Norwegian governments, the U.S. Energy Association and Nordpool, while WAPP receives financial support from the World Bank directly or through trust funds with other donors. Besides donors and financial institutions, other international advisory institutions, like the Tony Blair Institute, work actively with national governments of both WAPP and EAPP to facilitate political decisions on regional trade.

6. Policy recommendations

These recommendations assume that a strong regional – and even continental – integration of the national power sectors, defined by an efficient development and utilisation of the available generation resources, and the development of the necessary enabling transmission infrastructure, with a fair allocation of benefits and costs to all parties, are desirable objectives to be pursued in Africa.

6.1. Accelerating the development of the three power pools

6.1.1. SAPP

The infrastructure development in the SAPP has adopted a decentralised approach (no single entity is entrusted with carrying on regional projects). Consequently, not all the members are connected to the regional network despite the fact that the market has been running for two decades. Effective functioning power pools require making investments in underlying

[11] For more details on national power sector reforms, see Electricity Market Design for African Power Pools: Taking Stock, Looking Ahead. Mohamed A.Eltahir Elabbas, 2021: http://resolver.tudelft.nl/uuid:613bdd7b-27f0-4b53-91f8-792e9b4b069d

infrastructure when needed (sufficient transmission and an adequate total volume of generation capacity) giving due consideration to long-term goals. In this regard, a centralised approach would be more effective connecting all member countries and building the generation capacity that is needed in the region. However, SAPP does not have the mandate to perform this role. Similarly, SAPP does not have a regional regulator, but a regulatory association, RERA, without the mandate to regulate transmission projects.

Effective centralised planning needs to overcome these shortcomings. SAPP is trying to make progress with PAU and RTIFF, but these solutions do not address the problem directly in its true dimension. SAPP should be tasked with the responsibility of developing a regional transmission plan – including indicative generation capacity expansion from a regional perspective – and RERA must have some enforcement mechanisms, making compatible the sovereignty of the countries on their territories and the regional needs.

6.1.2. WAPP

WAPP was developed top-down based on the directives and regulations of ECOWAS and adopted a centralised approach to infrastructure. This has helped to accelerate investments in the transmission network. However, there are issues with the current approach. Currently, the WAPP's market design is believed to be complicated. The WAPP ICC is planned to be both the system and market operator. This design option requires all the utilities to be technically prepared and on board in relegating the operation control to WAPP. This can be challenging in the current situation as some of the utilities do not have the capabilities and others do have trust issues about regional trade due to frequently unpaid debts. Therefore, the market should be built step-wise and bottom-up to allow utilities to integrate comfortably. One issue is that WAPP currently relies on funds from the World Bank that is keen on securing its investments and having a complete market design prepared by experts. WAPP needs to strengthen the capacity of its staff to be able to design and implement the regional market, which, on the other hand, should be simplified and aligned with the utilities' capabilities and interests.

The theory of regional integration (post-functionalism) anticipates a backlash problem should the degree of integration be increased. As regional integration progresses and takes control of some aspects of national decision making, it creates economic and cultural losers as well as some integration-scepticism[12]. This may explain some of the reluctance from utilities and some issues may arise from increasing foreign investments (the losers are domestic investors). WAPP could complement regional programs supported by international institutions with initiatives to develop national energy agents and activities, incentivise private and public national sector actors to go regional, and foster competition. These incentives could take the form of compensation mechanisms where WAPP creates losers (whether these belong to the public or private sectors). With its current regional development, if the market design of WAPP integrates national utilities, WAPP can transform into a tight pool that optimises the generation across the region, similar to the Independent System Operator (ISO) model in the United States (U.S.).

[12] Schimmelfennig, F. (2018). Regional integration theory. In Oxford Research Encyclopedia of Politics.
Dixit, A. and Norman, V. (1986). Gains from trade without lump-sum compensation. Journal of International Economics, 21(1-2):111–122.

6.1.3. EAPP

The development of EAPP has been limited to conducting studies, workshops, and the preparation of power-pool-related documents and regulations. However, there is no clear approach to how EAPP will develop. Although the attempts to establish a regional regulator and the power pool documents can be seen as a top-down approach, EAPP lacks the regional body through which it can exercise regional authority. EAPP could benefit more from a bottom-up approach for a market design that would attend to the utilities' interests. A difficulty for adopting this approach is how decisions are made in EAPP. With its dependence from the council of ministers, EAPP is somehow a political organisation and political support will be very much needed due to the lack of a common REC. However, there is no merit in leaving all decisions to the ministers, especially the technical issues that could be decided among the utilities. Including technical and operational matters in the council of ministers' meeting is considered a dysfunction[13]. The same goes for approving the Power Purchase Agreement model. Changing the governance structure to de-politicise EAPP would not yield the desired results. Instead, emphasis should be placed on decision-making protocols and giving the pool a degree of autonomy to decide on these matters internally.

EAPP would also benefit from a centralised approach to infrastructure development and has the mandate (objectives) for it. The issue then remains with the staff capacity to perform the EAPP activities. Additionally, the financing arrangements need to be improved, but perhaps the major obstacle to taking an investment role is the lack of the necessary institutions and frameworks for protecting foreign investments, as in the case of the Energy Protocol of ECOWAS. Providing that member countries support such a role, EAPP could tackle this by attending to the property rights of regional projects, starting with member countries and adopting initiatives to coordinate with donors and other regional organisations working on infrastructure development, e.g., the Nile Equatorial Lakes Subsidiary Action Program (NELSAP). For this to happen, proper capacity-building programs are needed to strengthen EAPP's legal and financial competence.

EAPP's organised market could start organically between interconnected members and expand to include other countries. The region of EAC is suitable for starting the market as countries have been pushing for harmonisation (through their own regional regulatory, EREA) and ratified the EAC Common Market Protocol. Additionally, most of the bilateral agreements in the region are between EAC members that will soon be interconnected – via Ethiopia, all EAPP countries can be connected. An alternative – perhaps less desirable – scenario would consist of starting a separate market between EAC countries and later integrating it with EAPP. However, by not attending to all members' aspirations, EAPP would run the risk of increasing members' disinterest[14].

6.2. Enabling regional power pools - regional economic communities

Regional power pools are enabled by the policies of their RECs. We recommend policies that give the power pool a fair degree of autonomy and authority in making decisions and performing projects to deepen the integration in the energy sector. Such policies are crucial for enabling the

[13] For more details, see the Joint Review of Swedish/Norwegian Support to the Southern African Power Pool and the Eastern African Power Pool, Norda and KPMG, 2019

[14] There have been occasions when countries' representatives have not attended official meetings, and some countries, like Sudan, do not have an official representative.

power pool to develop regional infrastructure. The essence of regional integration is to contribute to the progress and development of the entire region. The policy objectives should be the economic development of all members. African countries are in very different stages of development and it is essential to adopt a centralised approach to infrastructure development to reduce the differences. Via power pools, infrastructure investments can be significantly improved by pooling external and internal resources together for optimal social value. The REC has another critical role to play in enabling this. Regional institutions should promote and protect foreign investments as well as investments performed by countries with support from multilateral organisations.

6.3. Empowering regional power pools - international institutions

African power pools are in different stages of development, and they face different issues. External support from international institutions is indispensable for bringing and adapting the best international practices to the African power pools. So far, international institutions have financed studies and provided technical support for market design (tariff methodology, market rules, power purchase agreements, etc.).

While these supporting programs are important, the development of power pools requires a specific attention to a sustainable operation. Most of the time, financial support is paid for consultants to perform studies and adds little to the capacity of the staff of the power pools. Moreover, the pool might be facing more pressing issues like managing stakeholders'/utilities' engagement or pooling resources and investments. Therefore, supporting programs should also include non-technical support in capacity-building in leadership and financing.

International institutions can also have a role in empowering the power pool by working with national governments to manage regional trade and market opening. These advisory institutions have expertise in dealing with stakeholders and could help the power pools in their engagement with the utilities. We recommend that these institutions coordinate with the power pool to make all stakeholders on board with the common objective of strengthening regional integration.

6.4. Unlocking the potential of regional power pools - member countries

Theoretically, the case for power pools is strong. However, the practical implementations limit their benefits. There are many issues with the African power systems that render power pooling challenging. Member states have a significant role to play in creating an enabling environment in which regional benefit is maximised. This does not necessarily mean greater state intervention but the use of pragmatic policies and actions aimed at addressing sector failure and socio-economic imbalances. In the regional context, governments should avoid protectionist policies that inhibit regional trade. Policies should be introduced to allow IPPs (perhaps under some conditions) to participate in the regional market to increase competition. Harmonisation of pricing and adoption of cost-reflective tariffs are strongly recommended for economic efficiency. Regional trade provides more flexibility in accommodating national demands. Member countries are recommended to introduce policies to rely on trade to fulfil peak demand and scheduling maintenance. Such policies increase the overall reliability and trust in regional trade. The power pool can play an important role in pooling financial resources for investments and implementing regional projects. Member countries are recommended to support the pool in taking such a role (through national legislation and regulations) and coordinate together in the planning and

execution of infrastructure projects. This also includes coordination between existing sub-regional cooperation and the power pool on long-term planning.

Table 2. Summary of some of the characteristics of the three power pools.

	SAPP	WAPP	EAPP
Autonomy	Semi-autonomy: internal decision-making while external decision-making is subject to SADC approval.	Complete autonomy.	No autonomy: all decisions are subject to the approval of the council of ministers.
Voluntary or mandatory pool	Voluntary pool, only monitoring bilateral agreements.	Voluntary pool, with standard approved bilateral agreements by WAPP.	Voluntary pool (currently working on a model for Power Purchase Agreements).
Membership	Vertically integrated utilities (full voting rights) and IPPs (limited voting rights).	TSO, system operators, generators, distribution/retail companies, and others.	Vertically integrated utilities.
Trading platform	DAM, IDM, FPMW/M, and planned balancing market.	Planned DAM and ancillary services.	Planned ADAM.
Transmission tariff methodology	MW-km load flow-based tariff (under review)	MW-km load flow-based tariff	None
Balancing mechanism	Is left to the different system operators. A balancing market is currently under trial.	None	None
Investment unit (functionality)	Project Advisory Unit: does not execute projects.	WAPP donors' coordination committee and WAPP project unit: execute projects.	None
Position of the regulator	No regional regulator, or self-regulation.	The regional regulator, ERERA, is external to the pool governance structure.	The regional regulator, IRB, is internal to the pool governance structure.